

14. *Gobius encaomus* sp. nov.
15. *Gobius thalassinus* sp. nov.
16. *Gobius oceanicus*.
17. *Scorpaena stearnsi*.
18. *Porichthys plectrodon*.
19. *Isesthes scrutator*.
20. *Etropus crossotus*.

Additional facts are also made known with regard to the distribution of *Scomber colias*, *Coryphæna hippurus*, *Mesogonistius chatodon*, and *Pacilichthys barratti*.

In a list given by us of the fishes of Beaufort Harbor, North Carolina (Proc. U. S. Nat. Mus. 1878, 365), the following errors of identification are made:

Siphonostoma fuscum = *Siphostoma louisianæ* and *floridae*.

Pseudorhombus ocellaris = *Paralichthys deutatus*, *ocellaris* and *albigutta*.

Prionotus punctatus = *Prionotus scitulus*.

Prionotus evolans = *Prionotus sarritor*.

Carangus chrysus = *Caranx beani* type (probably young of *Caranx ruber*.)

Chirostoma menidium = *Menidia bosci* and *laciniata*.

Belone hians = the young, probably, of *Tylosurus caribbaeus*.

Under the heading of *Lophopsetta maculata*, it should have been stated that the species was admitted to the list on the authority of Dr. Yarrow, but was not seen by us.

INDIANA UNIVERSITY, November 6, 1882.

LIST OF FISHES NOW IN THE MUSEUM OF YALE COLLEGE, COLLECTED BY PROF. FRANK H. BRADLEY, AT PANAMA, WITH DESCRIPTIONS OF THREE NEW SPECIES.

By **DAVID S. JORDAN** and **CHARLES H. GILBERT**.

About the year 1866 a considerable collection of fishes was made at Panama and in the neighboring Pearl Islands, by the late Prof. Frank H. Bradley. These specimens are now preserved in the museum of Yale College. By the courtesy of Prof. A. E. Verrill they have been placed in our hands for determination. We give here a list of the species contained in the collection, with remarks on some of the more interesting forms. Three species appear to be still undescribed, and a very large proportion of the others were unknown at the time the collection was made. A series of duplicates has been presented by Professor Verrill to the National Museum. Unless otherwise stated, all the species mentioned were obtained at Panama, by Professor Bradley.

1. *Ginglymostoma cirratum* (Gmel.) M. & H.

A single young example.

2. *Mustelus* sp.

?? *Mustelus mento* Cope, Proc. Am. Philos. Soc. XVII, 1877, 47.

Three specimens, each about 10 inches long, in poor condition. The fins are much larger than in *M. lunulatus*, the space between dorsals being but twice base of first dorsal and $2\frac{1}{2}$ times base of second. The color is also much darker, that of the fins nearly uniform dusky, with lighter edges. *M. lunulatus* was hitherto known only from Mazatlan, unless indeed *Mustelus mento* Cope, from Peru, should prove to be the same.

3. *Urolophus halleri* Cooper.

Two specimens. The species has now a recorded range from Panama to Point Conception, Cal. It is abundant only along the northern part of this range, from San Diego to Santa Barbara.

4. *Syrhina exasperata* (Jor. & Gilb.) Garman.

Two adult female specimens, each over 20 inches long, are in the collection made by Mr. Bradley at Panama. The species was hitherto known only from Southern California, and was represented in collections by numerous immature males collected by ourselves at San Diego, and by a single adult male (type of *Trygonorhina alveata* Garman) in the Museum of Comparative Zoology at Cambridge.

The following points in regard to these female specimens are worthy of note: The general plan of coloration is the same as in males, including the large black blotch covering posterior angles of pectorals below; the upper side of disk has, however, several round yellowish spots as large as pupil, each spot ocellated with blackish; a very distinct spot on each side of shoulder; a second on pectoral fins near posterior angle; and a third midway between the latter and median line of back; several other less conspicuous spots near middle of back anteriorly. The disposition of spines and prickles above is the same as in males; but below, the entire surface of body and tail is covered with uniform fine shagreen, instead of being largely naked.

Disk somewhat broader than long, the length slightly greater than that of tail.

5. *Arius brandti* Steind.**6. *Arius alatus* Steind.**

Two specimens, each about 16 inches long. Head $3\frac{3}{4}$ in length; maxillary barbel reaching nearly to tip of pectoral spine.

7. *Arius kessleri* Steind.

A single specimen shows the following characters: Head very coarsely granular, the occipital process narrowly triangular and sharply keeled, rounded posteriorly; the antedorsal shield very narrow, about half diameter of orbit. Humeral process with few granulations. Maxillary barbel barely reaching base of pectoral spine. Vomerine patch of teeth much narrowed toward median line, and divided by a furrow. Fontanelle club-shaped.

8. *Arius insculptus* Jor. & Gill.

Three specimens. Head with very fine and numerous granulations; occipital process very wide, truncate posteriorly, sometimes with fluted margin into which fit projections from the antedorsal shield; the latter is wide. Humeral process with very fine numerous granulations. Fontanelle tapering to a point posteriorly. Barbels much longer than in *kessleri*, the maxillary barbel reaching beyond first third of pectoral spine. Vomerine patch of teeth not divided on median line.

9. *Arius planiceps* Steind.

A male and a female of this species, each about 10 inches long, differ somewhat from those examined by Dr. Steindachner, and from each other. In the male the head is very long, $3\frac{1}{2}$ in body; in the female, 4 in body. The maxillary barbels in the male are short, not reaching base of pectoral spine, and the granulation of the cephalic plates is much less marked, the granules on occipital process scarcely larger or more thickly set than on rest of head. In both specimens the occipital process is broader at the base, and much more tapering posteriorly than is represented in the figure given by Dr. Steindachner. None of the specimens examined by us show any distinct trace of a median furrow through the vomerine patch of teeth.

10. *Arius dasycephalus* Gthr.11. *Ælurichthys panamensis* Gill.12. *Ælurichthys pinnimaculatus* Steind.12. *Albula vulpes* (L.) Goode.13. *Elops saurus* Linn.14. *Opisthonema libertate* (Günth.) J. & G.

This species differs apparently from *thrissa* in the absence of dark spots on the scales of the back, in the longer and more numerous gill-rakers, and in the longer head. In *libertate*, the head varies from $3\frac{2}{5}$ (in young) to $4\frac{1}{3}$ (in adults); in *thrissa*, from 4 to $4\frac{4}{5}$. *Libertate* is bluish or greenish above, silvery on sides and below, a yellowish-olive streak on level of orbit. A small indistinct black spot at upper angle of preopercle, and a larger more distinct one on scapula. Dorsal olive-yellow, with dusky margin; caudal dusky, the lobes tipped with jet black; upper rays of pectorals dusky. Tip of snout and lining membrane of opercle black.

A specimen of *O. thrissa* is also in the collection, reputed to have been taken by Professor Bradley at Panama. We prefer not to admit it to the list from the Pacific coast until its occurrence there is verified.

15. *Stolephorus panamensis* (Steind.) J. & G.

Two specimens, about 5 inches long, with anal rays respectively 33 and 37 in number.

16. *Stolephorus miarchus* Jor. & Gill.

Many small slender anchovies collected by Professor Bradley in the

Pearl Islands belong to this species. They are of the same size and general appearance as the original types from Mazatlan. The anal rays are quite constantly 13, and the body is exceedingly slender, the depth being about $\frac{1}{7}$ the length.

17. *Pœcilia elongata* Günther.

18. *Ophisurus zysturus* Jor. & Gilb.

Three fine examples, the longest 28 inches long, from Mazatlan, Acapulco, and Panama, respectively. These specimens vary from the original types from Mazatlan in the following respects: The vomerine patch of teeth is broader, with a well-marked constriction anteriorly, with teeth arranged in about three irregular series; the eye is contained twice in snout, which is $\frac{4}{3}$ interorbital space; length of pectoral less than width of gill-opening. The dark spots are arranged more regularly, those of the upper two series nearly equal in number. The specimen from Mazatlan has the spots of the upper two series corresponding, while in the other two specimens they alternate. Spots on dorsal fin distinct, not confluent. In the smallest specimen (from Panama) the head is contained but three times in the trunk.

19. *Ophichthys zophochir* Jor. & Gilb.

A fine specimen, about 2 feet long, collected by Mr. J. A. Sutter at Acapulco. The species was hitherto known only from Mazatlan Harbor.

20. *Sidera panamensis* (Steind.) J. & G.

Murana panamensis Steindachner, Ichth. Beitr. V, 19; not *Sidera panamensis* J. & G., Bull. U. S. Fish. Com., 1882, 106 = *Sidera castanea* J. & G., MSS.

Three specimens from Pearl Islands, the largest 10 inches long, answer perfectly to Steindachner's description of this species.

21. *Sidera verrilli* sp. nov.

A single specimen in the Yale College Museum, $17\frac{1}{2}$ inches long, collected by Professor Bradley at Panama, serves as the type of the following description:

Body comparatively slender, the tail about equal to the rest of the body. Head $3\frac{1}{4}$ in length of trunk. Cleft of mouth moderate, 3 in head. Mandible somewhat curved, and the teeth very long, so that the mouth does not admit of being completely closed.

Teeth everywhere uniserial, those on sides of mandible strong, compressed, hooked backwards, about 13 in number on each side, the teeth growing gradually smaller backwards, those next angle of mouth very small; 4 or 5 anterior teeth on each side very large, subequal. Teeth of upper jaw in all respects similar to those in the lower, and in equal number. A short row of very small teeth on vomer posteriorly; the anterior canines wanting in our specimen (perhaps lost); teeth all apparently entire.

Eye rather large, somewhat nearer angle of mouth than tip of snout,

its diameter about half length of snout. Gill-opening small, scarcely wider than orbit. Tube of anterior nostril rather short, less than half eye. Posterior nostril above front of eye. Occipital region little prominent.

Dorsal fin rather high, commencing nearly midway between gill-opening and eye, its greatest height rather more than half greatest depth of body.

Color, in spirits, light chestnut brown, finely freckled, but without distinct spots of any kind. Dorsal with a conspicuous edge of blackish, the margin narrowly white. Anal edged with white. No black about eye or gill-opening

22. *Muraena* ? *melanotis* (Kaup.) Gthr.

A specimen, 22 inches long, has the teeth everywhere uniserial, otherwise agreeing with descriptions of *melanotis*. Body and fins dark brown, marbled with blackish, everywhere with small yellowish spots much more numerous anteriorly, those on the tail narrowly oblong. Angle of mouth, and a large roundish blotch around gill-slit black, this blotch nearly four times as wide as orbit.

Eye over middle of gape, which is $2\frac{3}{5}$ in head. Head $2\frac{1}{2}$ in trunk. Tail slightly longer than rest of body.

23. *Tylosurus pacificus* (Steind.) J. & G.

24. *Hemirhamphus* ? *brasiliensis* (Linn.) C. & V.

Two adults, about 15 inches long, agree with specimens collected by Mr. Gilbert at Panama, and differ from Atlantic representatives of the species in their longer pectoral fins, and in the more anterior insertion of the ventrals. It is probable that the Pacific form is a distinct species or subspecies, but our material from the Atlantic is too limited to warrant the separation of the former.

The specimens before us have the pectoral nearly six-sevenths length of head (three-fourths in Atlantic specimens) and greater than depth of body; the distance from root of ventrals to base of caudal is slightly less than one-third distance to front of snout, and measured from base of ventrals forwards reaches a point nearer base than tip of pectorals. D. 14; A. 11 or 12. Scales 58. Head $4\frac{2}{3}$ in length; lower jaw 5 in total length (including caudal). Eye $4\frac{1}{5}$ in head, equaling interorbital space. The first 3 to 6 rays of dorsal and anal with series of scales, these fins otherwise naked.

25. *Hemirhamphus unifasciatus* Ranz.

26. *Mugil brasiliensis* Agassiz.

27. *Mugil inciis* Hancock.

A single adult example with the scales noticeably smaller than in *M. brasiliensis*, and the vertical fins lower. Lateral line 43; 14 scales in a cross series. Longest dorsal ray less than half length of head.

28. *Querimana harengus* (Günther) J. & G.

29. *Sphyræna ensis* Jor. & Gilb.

- 30. *Scomberomorus maculatus* (Mitch.) J. & G.
- 31. *Caranx caballus* Gthr.
- 32. *Caranx latus* Ag. (= *fallax* C. & V.)
- 33. *Caranx hippos* (Linn.) J. & G.
- 34. *Caranx setipinnis* (Mitch.) J. & G.

This species has a well-developed series of spinous plates along the lateral line, as has been already pointed out by Bleeker and Steindachner. There seems to be no reason why it should not be referred to *Caranx*.

- 35. *Selene vomer* (L.) Lütken.
- 36. *Oligoplites saurus* (Bl. & Schn.) J. & G.
- 37. *Trachynotus rhomboides* (Bloch) Cuv. & Val.

Two small specimens, each $1\frac{1}{2}$ inches long, differ from an example of the same size from Beaufort, N. C., in the much deeper body (depth $1\frac{2}{5}$ in length), and in the greater development of all the spines. The triple spine at angle of preopercle is conspicuous, and the highest dorsal and anal spines are longer than the soft rays. Body thickly dusted with brown points; dorsal and anal blackish. D. VII-18; A. III, 17.

- 38. *Centropomus armatus* Gill.
- 39. *Centropomus robalito* Jor. & Gilb.
- 40. *Centropomus unionensis* Bocourt.
- 41. *Centropomus undecimalis* (Bloch) Lac.
- 42. *Epinephelus sellicauda* Gill.
- 43. *Epinephelus analogus* Gill.
- 44. *Epinephelus multiguttatus* (Günther) J. & G.
- 45. *Serranus calopteryx* Jor. & Gilb.

Two immature specimens from Panama and Pearl Islands respectively. Hitherto recorded only from Mazatlan and the Galapagos Islands (as *Prionodes fasciatus* Jenyns).

- 46. *Lutjanus argentivittatus* (Peters) J. & G.
- 47. *Lutjanus guttatus* (Steind.) J. & G.
- 48. *Lutjanus novemfasciatus* Gill.
- 49. *Lutjanus aratus* (Günther) J. & G.
- 50. *Pomadasys pacifici* (Günther) J. & G.
- 51. *Pomadasys macracanthus* (Günther) J. & G.
- 52. *Pomadasys elongatus* (Steind.) J. & G.
- 53. *Pomadasys chalceus* (Günther) J. & G.
- 54. *Pomadasys brevipinnis* (Steind.) J. & G.

This specimen extends the range of this species from Mazatlan to Panama. It may be noticed that the figure given by Dr. Steindachner (Ichthyol. Notiz., VIII, Taf. 5) is faulty in several respects. Thus the scales with their accompanying dark streaks are represented as oblique below the lateral line, whereas in reality they are horizontal. The inter-

maxillary processes are shown in the figure to project beyond the line of profile, while in the fish nothing breaks the evenly convex outline. The accompanying description does not countenance these errors of the artist. Dr. Steindachner has more lately (Ichthyol. Beit., II, 8) incorrectly identified *brevipinnis* with *Microlepidotus inornatus* Gill. The latter is a widely different species, with scaleless dorsal and anal and 14 dorsal spines.

- 55. *Diabasis sexfasciatus* (Gill) J. & G.
- 56. *Diabasis scudderi* (Gill) J. & G.
- 57. *Diabasis flaviguttatus* (Gill) J. & G.
- 58. *Diabasis maculicauda* (Gill) J. & G.
- 59. *Cyphosus analogus* (Gill) J. & G.
- 60. *Sciæna vermicularis* Günther.
- 61. *Sciæna chrysoleuca* Günther.
- 62. *Sciæna ophioscion* Günther.
- 63. *Larimus argenteus* (Gill) J. & G.
- 64. *Larimus breviceps* C. & V.
- 65. *Paralonchurus dumerili* (Bocourt) J. & G.
(*Genyanemus fasciatus* Steind.)
- 66. *Isopisthus remifer* J. & G.
- 67. *Micropogon altipinnis* Günther.

Very numerous immature specimens, showing: D. X-I, 20 or X-I, 21; and scales 6-45-13.

- 68. *Cynoscion reticulatum* (Gthr.) J. & G.
- 69. *Cynoscion album* (Gthr.) J. & G.
- 70. *Upeneus grandisquamis* Gill.
- 71. *Polynemus opercularis* (Gill) Gthr.
- 72. *Gerres peruvianus* Cuv. & Val.
- 73. *Gerres dowi* (Gill) Günther.

Three specimens, each about 6 inches long. Head $3\frac{2}{5}$ to $3\frac{1}{2}$ in length; depth $2\frac{4}{5}$ to 3. Eye 3 to $3\frac{1}{5}$ in head. Cheeks and sides without black specking.

- 74. *Pomacentrus rectifrænum* Gill.
- 75. *Acanthurus matoides* C. & V.
- 76. *Gobius soporator* Cuv. & Val.
- 77. *Gobius paradoxus* Günther.
- 78. *Batrachoides pacifici* Günther.
- 79. *Thalassophryne reticulata* Günther.

A single specimen about 12 inches long. Head $3\frac{1}{2}$ in length. D. II-25; A. 24.

- 80. *Poichthys margaritatus* Rich.

A specimen, $1\frac{1}{2}$ inches long, from Central America.

81. *Scorpæna plumieri* Bloch.82. *Scorpæna* sp.

Four immature specimens, representing apparently two species, both distinct from *plumieri*, are in the collection from Panama and Acajutla. They are too small to permit identification.

83. *Gobiesox adustus* Jor. & Gilb.

Two specimens, in fine condition, are in the collection. They were obtained by Captain Dow on the coast of Central America. The species was hitherto known from Mazatlan only.

The following points were incorrectly stated in the original description: Width of head $2\frac{2}{3}$ to 3 in length; pectoral one-third to two-fifths length of head; distance from base of caudal to front of dorsal, $2\frac{2}{3}$ in length of body, $3\frac{1}{2}$ in total, including caudal. D. 9 or 10; A. 7 or 8.

Emblemaria gen. nov. (*Blenniidae*.)

Body slender, not eel-shaped, compressed, scaleless. Ventrals present, jugular, each of one spine and two soft rays. A single dorsal fin beginning on the nape and extending to the caudal, with which it is not confluent; no notch between spinous and soft rays. Head cuboid, compressed, narrowed anteriorly, with much the aspect of *Opisthognathus*. Symphysis of lower jaw forming a very acute angle. A single series of strong, blunt, conical teeth on each jaw, and on vomer and palatines. Vomer and palatine teeth larger, their series continuous parallel to the series in upper jaw. No cirri anywhere. Gill-openings very wide, the membranes broadly united below, free from the isthmus. Lateral line obsolete.

This genus bears some resemblance to *Blennius*, but the dentition is entirely different, approaching that of *Chænopsis*.

84. *Emblemaria nivipes* sp. nov. (29,676).

Color in spirits: Sides dark brown, with 8 to 10 lighter vertical bars of variable width; body lighter below; obscure cross-bands on lower side of head. Dorsal blackish anteriorly, whitish behind, with membrane at intervals of every second, third, or fourth ray dusky; caudal light at base, its tip blackish; anal dusky-translucent; ventrals bright white, the basal portion dusky.

Head $3\frac{3}{4}$ in length; depth 7. D. XXIII, 14; A. 25. Body everywhere equally compressed, posteriorly tapering; head wider than body, of about equal depth, with very short, subvertical, sharply-compressed snout; eyes very large, approximated above, with some vertical range; orbital ridges sharply raised above, the interorbital region very narrow, channeled, about equaling diameter of pupil; eye $3\frac{2}{3}$ in head. Gape very wide, horizontal, low, reaching much beyond eye, the maxillary about four-sevenths head, not produced beyond angle of mouth; intermaxillaries separated by a groove from the snout, this groove continu-

ous for the entire length of the upper jaw, maxillary not evident, apparently adnate to the skin of the preorbital.

First dorsal spine inserted over margin of preopercle; spines all very slender and flexible, the posterior but weakly differentiated from the soft rays, the anterior portion of fin very high, the spines filiform, not exerted beyond the membrane; the longest dorsal spine about one-third length of body, the last spine about one-half head; membranes of last rays of both dorsal and anal slightly joined to base of caudal. Front of anal nearer snout than base of caudal by a distance equaling one-third length of head. Caudal three-fifths length of head; ventrals and pectorals slightly less.

A specimen 2 inches long, collected by Professor Bradley at the Pearl Islands, serves as the type of the species, and is numbered 29,676 on the register of the U. S. National Museum. Numerous smaller specimens are in the collection from the same locality.

85. *Cremnobates monophthalmus* Günther.

86. *Salarias rubropunctatus* C. & V.

Six specimens of this species, the longest 3 inches in length, were collected by Professor Bradley at the Pearl Islands. The fin rays, coloration, and proportions are those assigned this species by Cuvier and Valenciennes. In addition, there is a distinct jet-black spot behind the eye, with a narrow light edge anteriorly.

Head = depth, 4 in length (5 in total); eye $4\frac{1}{2}$ in head. D. XI, 16; A. 20. The teeth are somewhat less flexible than in *S. atlanticus*, and the canines in lower jaw are wholly wanting.

Specimens of the same species collected by Professor Bradley are in the collection from Callao. The species called by Kner (*Novara Fische*, 198) *S. rubropunctatus* seems to be different from this.

87. *Dactyloscopus* sp. nov.

? ? *Dactylagnus mundus* Gill, Proc. Acad. Nat. Sci. Phila., 1862, 505, 506.

A specimen in the present collection, taken by Captain Dow on the coast of Central America, agrees well with the type of *Dactylagnus mundus*. It has, however, the dorsal beginning at the nape, and the pseudo-branchiæ wanting. It is, therefore, a typical *Dactyloscopus*, and probably represents a species hitherto undescribed, but without further information we are not prepared to describe it as new, as it may be really identical with *Dactylagnus mundus*.

Color in spirits, light olivaceous, the edgings of the scales, some vermiculations on top of head, and the labial fringes, clear brown. Fins translucent; the caudal with a brown bar at base. Eyes dark.

Head $4\frac{1}{2}$ in length; depth $6\frac{2}{3}$. D. VI-38; A. II, 37. V. 3. Scales 6-51-5. B. 6. L. $3\frac{1}{4}$ inches.

Head and body slender, compressed, the greatest width at occiput four-ninths length of head; the greatest depth is immediately behind

insertion of anal fin, thence tapering to a very narrow tail. Head narrow, cuboid, compressed, the upper surface nearly plane, the cheeks vertical. Eyes very small, superior, with little lateral range; diameter of orbit about $\frac{1}{15}$ length of head; snout very short, about equaling orbit. Anterior nostril in a short tube. Gape subvertical, the lower jaw very heavy, projecting, as in *Uranoscopus*; premaxillaries protractile, the processes reaching far behind orbits; lips fringed; both jaws with bands of villiform teeth; no teeth on tongue, vomer, or palatines.

Subopercle and interopercle very wide, flexible, striate, the latter overlapping throat and base of ventral fins, the former wholly covering base of pectoral fins; the striations of opercle terminate posteriorly in a wide, coarse, membranaceous fringe. Branchiostegal membranes not united, free from the isthmus. Pubic bones forming a sharp projection at throat. No pseudobranchiæ. Gills small, a round pore behind the fourth.

Dorsal beginning on the nape, its distance from snout about equaling depth of body. The first six rays are shorter than those following and not connected by membrane; as no traces of articulation can be found, they are probably flexible spines, but are not clearly differentiated from those immediately following. Origin of anal under fourth dorsal spine. Caudal distinct, narrow, short. Ventrals inserted under anterior margin of preopercle. Ventrals 2 in head; pectorals $1\frac{1}{4}$.

Scales large, with entire edges, wanting on head, breast, and region behind pectoral fins. Lateral line beginning at upper posterior angle of opercle, running parallel with the back on about 12 scales, then obliquely downwards to middle of body.

88. *Fierasfer dubius* Putnam.

(*Fierasfer arenicola* Jor. & Gill., Proc. U. S. Nat. Mus. 1881, 363.)

Numerous specimens 3 to 4 inches long from Pearl Islands.

Head $6\frac{3}{4}$ to $7\frac{1}{3}$; eye $4\frac{1}{2}$ to 5 in head. Teeth in upper jaw small, acute, in a rather narrow band; sometimes a few in the front of the jaw inconspicuously enlarged; those in lower jaw and on palatines conic, blunt, in somewhat wider bands, the outer series of lower jaw enlarged, canine-like; vomer with a narrowly oblong patch of small, blunt teeth, surrounding a median series of 3 to 6 conspicuously enlarged, retrorsely curved canines, which are usually much the largest teeth in the mouth.

The original types of this species belonged to the present collection, having been sent by Professor Verrill to the Museum of Comparative Zoölogy. They are said to have been taken alive from the shells of pearl oysters. Our *Fierasfer arenicola*, from Mazatlan, is apparently not specifically different.

The generic name *Carapus* Rafinesque, has been lately substituted for *Fierasfer* by Professor Poey, following a suggestion of Dr. Gill (Proc. Ac. Nat. Sci. Phila., 1864, 152). This change does not seem to us justifiable, as it certainly is most undesirable.

The following is the original diagnosis of *Carapus* (Raf., Indice d'Ittiol. Siciliana, 1810, 57):

"XII. Gen. *Carapus*. Nessun' ala dorsale, ne caudale, un' ale anale, e due ale pettorali, mascella superiore più lunga dell' inferiore, coda nuda al disotto. Osserv. Differisce dal vero genere *Gymnotus*, che hà l' ala anale lunghissima, ricuoprendo il disotto della coda, e la mascella inferiore più lunga della superiore."

No species is here mentioned, but in the list of Sicilian fishes, on page 37, we find:

"272. *Carapus acus*. Raf., App. gen. 12 (*Gymnotus acus* Linn.) *Carapo* aguglia. *Anciduzza*."

We find that these two genera correspond to the first and second subgenera recognized under *Gymnotus* by La Cépède, the first ("*Gymnotus*") including *electricus*, *putaol* (*fasciatus*), and *albus*; the second ("*Carapus*") including *carapo*, *fierasfer* (= *acus* L.), and *longirostratus*. The name *Carapus* is evidently suggested by "*Carapo*," and the generic diagnosis of Rafinesque above quoted seems to be entirely extracted from Gmelin's description of *Gymnotus carapo* ("*Gymnotus* * * * dorso apterygio, pinna ani longitudine, * * * maxilla superiore longiore * * * ani pinnae in caudæ apicem non excurrunt, sed ante caudæ pinnam desinent"). The diagnosis does not apply to the species of *Fierasfer*, which have a distinct dorsal fin. It seems, therefore, proper to consider *Gymnotus carapo* L. the type of *Carapus* Raf., while *G. electricus* L. is evidently the type of Rafinesque's *Gymnotus*.

In the tenth edition of the *Systema Naturæ*, but two species are referred to *Gymnotus*, *G. carapo* and *G. asiaticus*, the latter not being a member of this group. If we date our nomenclature from this tenth edition, *G. carapo* L. must be taken as the type of *Gymnotus*, *Carapus* Raf. being a synonym of *Gymnotus*, while the name *Electrophorus* Gill should be used instead of *Gymnotus* for *Gymnotus electricus* L. (ed. xii).

89. *Citharichthys spilopterus* Günther.

90. *Antennarius sanguineus* Gill.

91. *Antennarius strigatus* Gill.

An adult example, 10 inches long, agrees in but few respects with the descriptions drawn, by Gill and Günther (*Antennarius tenuifilis*), from immature examples.

First dorsal spine elongate, filiform, twice the length of the second, with very slender dermal tip. Third spine more robust than second, wholly concealed in the skin, its length equal to that of first spine. Lips, maxillary, and a large transverse area behind second dorsal spine naked, each side of this area with a few spinous tubercles. Skin elsewhere covered with fine shagreen-like armature.

D. III-12; A. 7.

Color in spirits olivaceous everywhere on body, and on inside of

mouth finely mottled with light olive brown; many irregular blackish areas on head and body, those on lower side of head showing a tendency to form concentric bars; some on sides forming irregular bars downwards from back; posterior portion of body not darker than the anterior; terminal parts of all the fins largely blackish, but with distinct black bars; some scattered round blackish blotches on sides, each consisting of a number of smaller black spots on an olive ground. Head and body with numerous pinkish and rose-red spots and bars, the latter sinuous, irregular, with wavy margins; a pinkish bar behind maxillary; a broad, saddle-like pinkish blotch across interval between second and third dorsal spines; a third bar from in front of origin of second dorsal downwards towards base of pectorals; a fourth across top of caudal peduncle. First dorsal spine narrowly barred with brown.

92. *Balistes capistratus* Shaw.

(Shaw Genl. Zool. V, pt. 2, 417, 1804 (based on *Baliste bridé* La Cépède = *Balistes mitis* Bennett = *Balistes frenatus* Richardson.)

93. *Balistes polylepis* Steind.

94. *Tetrodon angusticeps* Jenyns.

(*Canthogaster lobatus* Steind., Ichthyol. Not. X, 18.)

This species is represented in the collection by two fine specimens from Panama, each about one foot long. They agree perfectly with Dr. Steindachner's *Altata* specimen (type of *C. lobatus*), but the nostrils are formed as in typical species of *Tetrodon*, *i. e.*, tubular, with two lateral openings near the summit.

Jenyns' description of *T. angusticeps*, from the Galapagos Islands, was evidently drawn from a specimen in poor condition. This would account for the alleged absence of prickles on the skin. In all other respects the description agrees with the specimens before us—the narrow, channel-like interorbital space, the minute papilliform protuberances on the skin, and the pair of fleshy flaps behind the nape being conspicuous features of the species.

95. *Tetrodon politus* Ayres.

96. *Arothron erethizon*, sp. nov. (29679).

Body all, except snout and caudal peduncle, thickly beset with long, robust, quill-like spines, which are longest and most numerous on the belly; these spines are concealed by the outer skin until the animal is inflated, in which case they protrude; under a microscope the skin is seen to be provided with innumerable minute protuberances, much as in *Tetrodon angusticeps*.

Snout short, cuboid, its length $1\frac{1}{2}$ times orbit; the upper profile slightly concave, interorbital space wide, slightly less than twice diameter of eye, strongly concave because of the elevated orbital ridges. Nostril tentacle bifid to the base, the divisions compressed, flap-like, without conspicuous openings; the inner surface of each division is thickly

covered with minute, cup-shaped depressions, into which open the perforations of the tube. Distance from tentacle to eye but twice length of tentacle, which equals one-fourth diameter of orbit.

Caudal fin equal to length of caudal peduncle. Dorsal large, the base equaling three-sevenths height of fin.

Body without fleshy slips or folds.

Head $3\frac{1}{2}$ in length; eye about one-fourth head. D. 9 or 10; A. 10.

Color in spirits: Dark brown above, white below; entire upper parts including caudal fin, covered with round, white spots, most numerous on caudal peduncle, the largest much less than half pupil; a round black area surrounding base of pectorals, bounded by a white line; several parallel longitudinal black streaks below the pectorals; orbit with two concentric white rings.

Known from six specimens collected by Professor Bradley at Panama. The type is numbered 29679 on the register of the National Museum.

The following species are here for the first time recorded from Panama:

1. *Ginglymostoma cirratum*.
2. *Urolophus halleri*.
3. *Syrrhina exasperata*.
4. *Stolephorus miarchus*.
5. *Ophisurus xysturus*.
6. *Ophichthys zophochir*.
7. *Sidera verrilli* sp. nov.
8. *Serranus calopteryx*.
9. *Pomadasys brevipinnis*.
10. *Gobiesox adustus*.
11. *Emblemaria nivipes* sp. nov.
12. *Salarias rubropunctatus*.
13. *Dactyloscopus* sp. nov. (?)
11. *Tetrodon angusticeps*.
15. *Arothron erethizon* sp. nov.

INDIANA UNIVERSITY, *December 1, 1882.*

JUMPING SEEDS AND GALLS.*

By CHARLES V. RILEY.

Having recently received some fresh specimens of so-called "Mexican Jumping Seeds," or "Devil's Beans," as they are popularly called, I take occasion while yet they are active to exhibit them to the society. It will be noticed that these seeds are somewhat triangular, or of the shape of convolvulus seeds, there being two flat sides meeting at an obtuse angle, and a convex one, which has a median carina. They not only

*Read before the Biological Society of Washington November 24, 1882.